

Patent Claims:

1. Hydraulic brake system for vehicles with a brake pressure generator unit (2) which is operable by introducing an actuating force by way of an actuating device (1) that includes a first hydraulic chamber (3) having a volume which decreases when the brake pressure generator unit (2) is actuated, out of which pressure fluid volume is displaced due to the volume decrease and to which wheel brakes (8, 9, 10, 11) are connected by way of a first hydraulic connection (7), wherein a pump (16, 16') is arranged which is capable of delivering the pressure fluid volume into the wheel brakes (8, 9, 10, 11) that is displaced out of the first hydraulic chamber (3) due to the volume decrease,
c h a r a c t e r i z e d in that the first hydraulic chamber (3) includes an elastic means (6) by which a force/travel characteristic curve is determined in the actuating device (1) when an actuating force is introduced.
2. Brake system as claimed in claim 1,
c h a r a c t e r i z e d in that the pump (16') is configured as a bidirectional pump.
3. Brake system as claimed in claim 1 or 2,
c h a r a c t e r i z e d in that a second hydraulic connection (19) is disposed between the first hydraulic chamber (3) and the wheel brakes (8, 9, 10, 11) and houses a control valve (21), preferably an analog valve.

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4. Brake system as claimed in claim 3, characterized in that there is provision of a non-return valve (18) which is operable by the difference in pressure between the first hydraulic chamber (3) and the wheel brakes (8, 9, 10, 11) and which opens the second hydraulic connection (19) when excess pressure prevails in the first hydraulic chamber (3).
5. Brake system as claimed in claim 3 or 4, characterized in that the control valve (21) is designed as a part of a hydraulic-mechanic position follow-up controller (4, 25, 26, 27), and in that the valve position of this hydraulic-mechanic position follow-up controller (4, 25, 26, 27) is variable due to a deformation of the elastic means (6).
6. Brake system as claimed in any one of claims 1 to 5, characterized in that a third hydraulic connection (34) accommodating a second valve (5) is provided between the first hydraulic chamber (3) and a pressure fluid supply reservoir (20).
7. Brake system as claimed in any one of claims 1 to 6, characterized in that the brake pressure generator unit (2) includes a master brake cylinder (36) with at least one hydraulic chamber (master brake cylinder chamber), preferably a tandem master brake cylinder (36) with two hydraulic master brake cylinder chambers (39, 40), one master brake cylinder chamber (39) thereof being connected by way of a hydraulic line (43) to a second piston chamber (44) in which the elastic means (6) that is arranged in the first hydraulic chamber (3) can be acted upon by pressure force by means of a separating piston (64).

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8. Brake system as claimed in claim 7, characterized in that the at least one master brake cylinder chamber, preferably two master brake cylinder chambers (39, 40) of a tandem master brake cylinder (36), are connected to two preferably front wheel brakes (8, 9) by way of at least one hydraulic line, preferably two hydraulic lines (54, 55), into which an electronically operable valve (56, 57) is inserted, in that there is provision of electronically operable valves (45, 46, 47, 48) between the first hydraulic chamber (3) and the wheel brakes (8, 9, 10, 11), and in that electronically operable valves (50, 51, 52, 53) are arranged between a ninth hydraulic line (49) for the return of pressure fluid out of the wheel brakes (8, 9, 10, 11).

9. Brake system as claimed in claim 7 or 8, characterized in that the at least one master brake cylinder chamber, preferably two hydraulic chambers (39, 40) of a tandem master brake cylinder (36), are connected to two preferably front wheel brakes (8, 9) by way of at least one hydraulic line, preferably two hydraulic lines (54, 55), inserted into which is a separating valve, preferably each one electromagnetically operable, normally open separating valve (56, 57), and in that the first hydraulic chamber (3) which includes an elastic means (6) is connected to two preferably rear wheel brakes (10, 11) by way of the line (7) and succeeding line portions (7c, 7d) into which a separating valve, preferably each one electromagnetically operable, normally open separating valve (47, 48), is inserted, and in that the first hydraulic chamber (3) which includes an elastic means (6) is connectable to the two preferably

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front wheel brakes (8, 9) by way of the line (7) and succeeding line portions (7a, 7b), in which a separating valve, preferably each one electromagnetically operable normally closed separating valve (45, 46) is inserted.

10. Brake system as claimed in any one of claims 7 to 9, characterized in that there is provision of a ninth hydraulic line (49) which can be closed by way of separating valves (50, 51, 53, 54), preferably electromagnetically operable, normally closed valves, and permits a return flow of pressure fluid from the wheel brakes (8, 9, 10, 11) into the pressure fluid supply reservoir (20), preferably by way of a master brake cylinder chamber (39), in one operating position.

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